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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,908	11/01/2001	William R. Entley	M-112021 US	7739

7590

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EXAMINER

ALANKO, ANITA KAREN

ART UNIT

PAPER NUMBER

1765

DATE MAILED: 02/26/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/003,908

Applicant(s)

ENTLEY ET AL.

Examiner

Anita K Alanko

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 11-12, 14-16, 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Xia et al (US 5,935,340), Ngo et al (US 6,251,776), Yokoshima (US 6,417,080).

Xia discloses a method for removing fluorine residue in a process chamber comprising:  
supplying a hydrogen-containing gas in the process chamber (hydrogen or ammonia, col.59, line 28-col.60, line 14);

producing a plasma so that the plasma reacts with the fluorine residue to form a fluorine containing gas; and

evacuating the fluorine containing gas from the process chamber.

Xia does not disclose to an oxygen-containing gas to the chamber. Ngo teaches that it is useful to add oxygen to ammonia in order to remove residues from a surface (col.4, lines 7+). Yokoshima suggests that the addition of oxygen to ammonia during plasma etching is useful in order to control the amount of nitrogen, as well as to serve as a diluent (col.4, lines 4-24). It would have been obvious to one with ordinary skill in the art to add oxygen to the ammonia for plasma etching in the method of Xia because Ngo and Yokoshima teach that it is useful to add oxygen to ammonia for plasma etching.

As to the claims that cite a specific flow rate and composition, Ngo suggests flow rates within the ranges cited (col.4, lines 30-41). The composition is an important, art-recognized parameter because it controls the amount of active etching species available. It would have been obvious to one with ordinary skill in the art to conduct the method at the cited compositions in the method of Xia because the composition appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Xia et al (US 5,935,340), Ngo et al (US 6,251,776), Yokoshima (US 6,417,080) and Huang (US 6,492,276 B1).

The discussion of modified Xia from above is repeated here.

As to claims 7, 13 and 17, Huang teaches that a useful form of oxygen is  $N_2O$  (col.9, lines 59-61) in plasmas. It would have been obvious to one with ordinary skill in the art to use  $N_2O$  as the source of oxygen in the method of Xia because Huang teaches that it is a useful source of oxygen in plasmas.

It would have been obvious to one with ordinary skill in the art to conduct the method at the cited  $N_2O/NH_3$  compositions in the method of Xia because the composition appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

### *Conclusion*

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K Alanko whose telephone number is 703-305-7708. The examiner can normally be reached on Monday-Friday, 10:00 am-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin L Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9057 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Anita K Alanko  
Primary Examiner  
Art Unit 1765

AKA  
February 24, 2003